CD-MD AUTO CHANGER CONTROLLER

KCA-R31FM/R41FM

SERVICE MANUAL

KENWOOD

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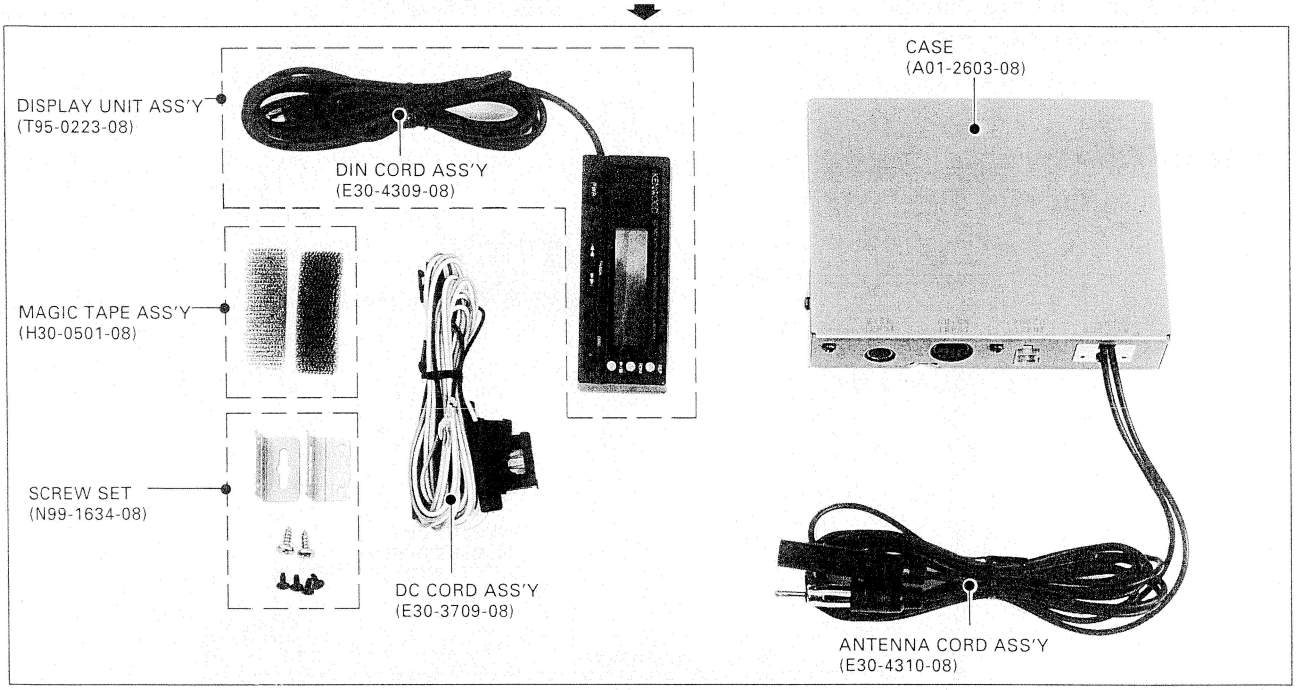
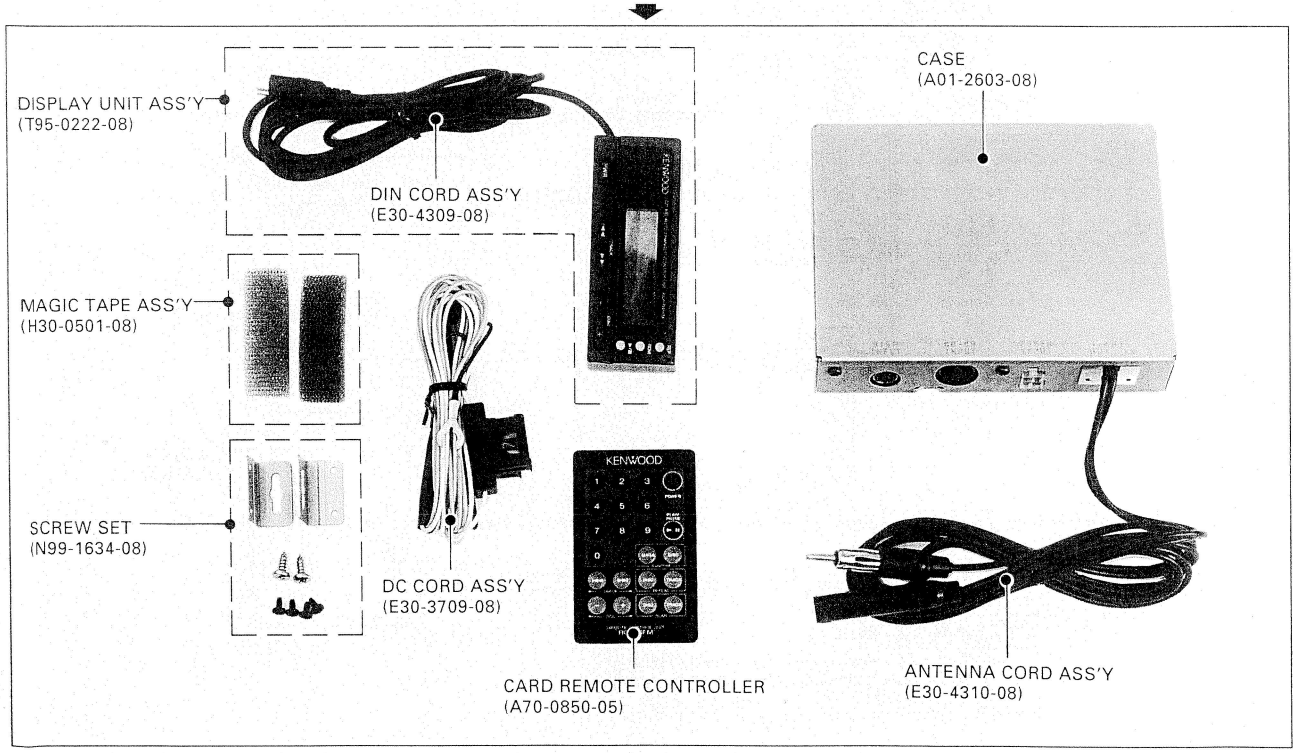
B51-6925-00(MC) 1586

KCA-R31FM



KCA-R41FM



KCA-R31FM/R41FM

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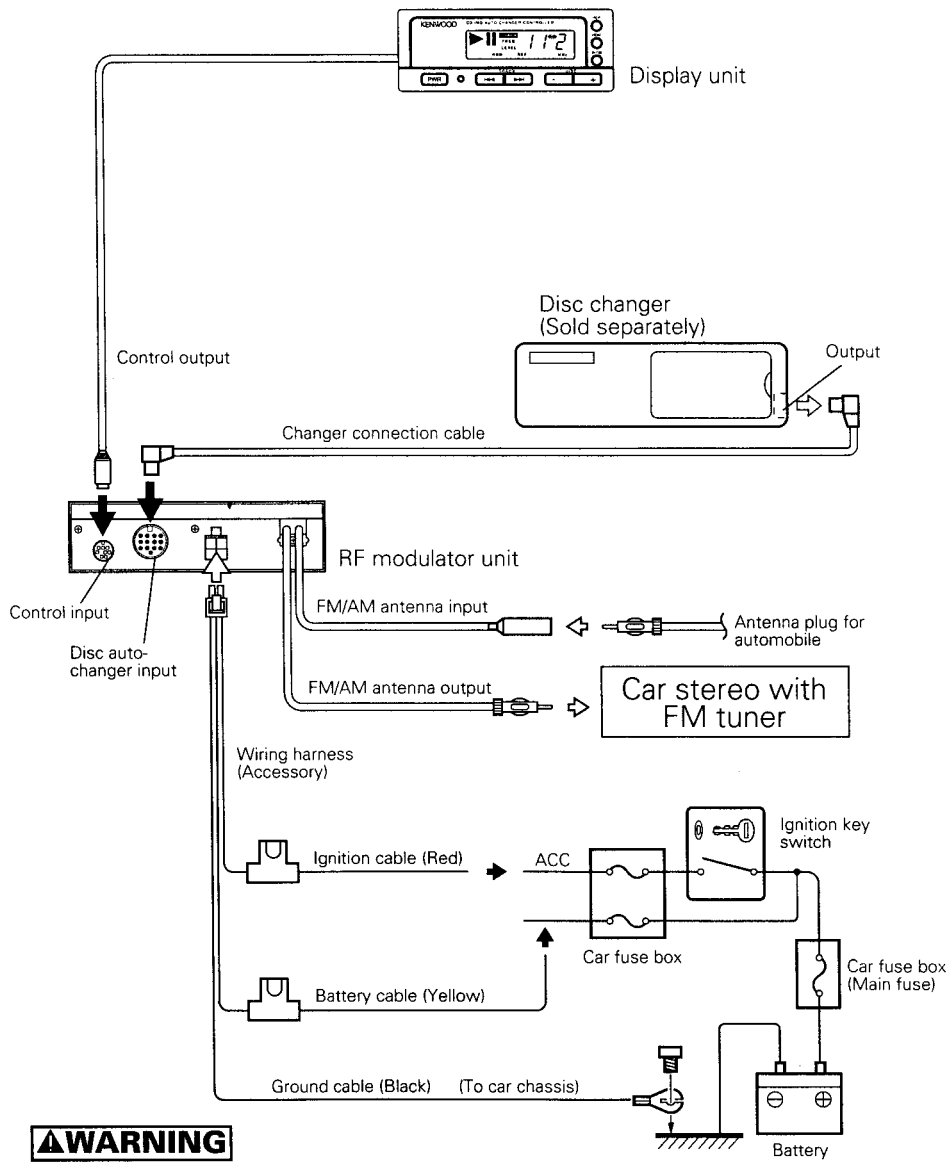
CONNECTIONS



⚠WARNING

To prevent fire when the ignition cable (Red) or battery cable (Yellow) is short-circuited by coming into contact with the vehicle chassis (ground), only connect the power supply after making the fuse box connections.

TROUBLESHOOTING GUIDE

Often, what appears to be a malfunction is due to user error. Before calling for service please consult the following table.

Symptom	Cause	Remedy
The power is not turned on.	The wiring harness fuse blows.	Check cables for shorts, then replace the fuse with one of with the same rating (shown on the case).
No sound or sound is low.	The volume level is minimum.	Raise the volume level.
	The fader or balance is set to one side.	Adjust the fader and balance.
	The input/output cable or wiring harness is connected incorrectly.	Connect the input/output cable or wiring harness correctly. See "Connections" (Page 19).
The unit does not work properly when a button is pressed.	The microcomputer malfunctions.	Press the Reset button of the display unit.
Sound quality is poor. (Sound distortion)	The volume level is too high.	Use the appropriate volume level.
Disc play does not start.	Disc auto-changer input is not connected to the unit.	Connect the Disc auto-changer input to the unit.
	Power button is not turned ON.	Turn the power button ON.
The specified disc is not played; a different disc is played instead.	The specified disc is very dirty.	Check and, if possible, clean the disc. See "Cleaning your discs" .
	The disc is loaded upside down.	Eject the disc magazine and insert the disc correctly.
	Two discs are inserted in a slot.	Eject the disc magazine and insert the discs correctly.
	The number of the slot into which the disc is inserted is different from the number of the specified disc.	Eject the disc magazine and check the number of the specified disc.
	The disc is severely damaged.	Use another disc.
Sound skips due to vibration.	Something is touching the Disc auto-changer.	Keep it away from the Disc auto-changer.
	The disc is dirty or damaged.	If sound skips at the same part, the disc is faulty. Check and, if possible, clean the disc. See "Cleaning your discs".
	The unit is mounted at a slant.	Mount the unit so that is level.
	Changer unit is mounted in an unstable place.	Mount the unit in a stable place.
	The angle adjustment switches are set improperly.	Set the angle adjustment switches to the correct positions.
Nothing appears on the display.	The control output of the display unit is not connected properly.	Connect the control output properly.
Sound distortion.	A disc with a high recording level is used.	See Page 17. Change the modulation level / dynamic control setting.
Sound quality is poor.	The recording of the disc is poor.	Try playing another disc. If the sound is good, the fault was with the original disc.
	The disc is dirty or damaged.	Check and, if possible, clean the disc. See "Cleaning your discs".
No sound is heard even though the information concerning the Disc auto-changer is displayed.	Volume is set to minimum level.	Raise the volume level.
	The microcomputer does not function correctly.	Press the Reset button of the display unit.
	The system is not connected properly.	Connect the system properly. See "Connections" (Page 19).
The specified track is not played.	The player is set to RANDOM PLAY.	Turn off RANDOM PLAY.

In some cases, you may see one of the following error messages on your unit's display.

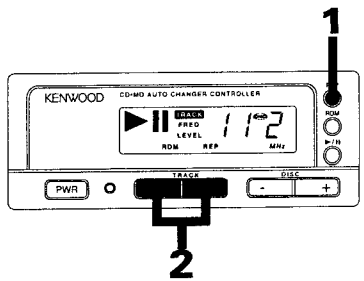
01 E: No disc magazine in changer. Disc magazine is not inserted properly.
⇨Insert the disc magazine properly.

02 E: No disc in disc magazine.
⇨Load a disc in the disc magazine.

04 E: Disc is too dirty. The disc is upside down. The disc is damaged.
⇨Clean the disc and insert it correctly.

99 E: The unit malfunctions due to a defective disc mechanism.
Press the Reset button. If the "99 E" message does not disappear, contact your Kenwood dealer.

0d E: When the temperature exceeds 60°C, a protection circuit will stop all operations. This message will then be displayed.
⇨Let the place where the changer is located cool down. As soon as it has cooled, the changer starts playing.



1 To set the frequency change mode

Hold down the REP button on the display unit for more than three seconds.

The FREQ indicator will light up and the currently set frequency will be displayed.

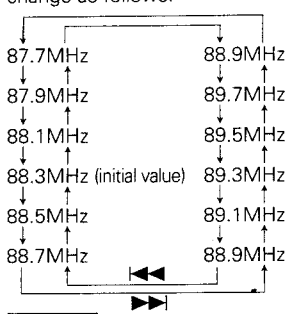
NOTE

- The initial value is 88.3MHz.
- If this function is on, the functions other than power on / off, reset, and modulation level / dynamic control, cannot be operated.
- This function is not available when the random play, repeat play, or scan play (KCA-R41FM only) function is on. Before using this function, cancel the other functions. This function cannot be used while loading a disc (while the play indicator is blinking).

2 To change the frequency

Press the ⏮ or ⏭ button on the display unit.

The transmission frequency will change as follows:



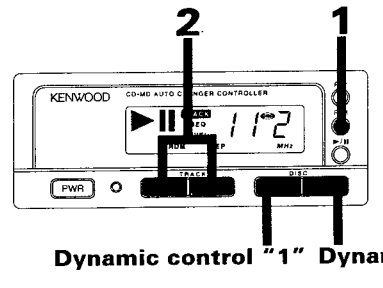
NOTE

Some car radios cannot receive a 87.7 MHz frequency.

To cancel

Hold down the REP button on the display unit for more than three seconds.

The FREQ indicator will go off and the frequency change will take effect.
The frequency change mode is automatically canceled if you do nothing for 15 seconds.

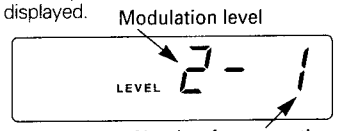


Dynamic control "1" Dynamic control "2"

1 To set the control mode

Hold down the RDM button on the display unit for more than three seconds.

The LEVEL indicator will light up and the currently set modulation level will be displayed.



NOTE

- If this function is on, the functions other than power on / off, reset, and changing the transmission frequency, cannot be operated.
- This function is not available when the random play, repeat play, or scan play (KCA-R41FM only) function is on. Before using this function, cancel the other functions. This function cannot be used while loading a disc (while the play indicator is blinking).

2 To change the modulation level

Press the ⏮ or ⏭ button on the display unit.

Each time the button is pressed, the modulation level changes in the range from 1 to 4. As the number increases, the modulation level increases. The initial setting is 2.

NOTE

Dynamic control
The unit comes with the prevention of distortion function to reduce sound distortion.
If the sound is distorted severely, press the + button on the display unit and then set the function to "2" (ON).
If the prevention of distortion function is set to "2" (ON), the sound extension is reduced.
The initial setting is "1" (OFF).

⚠CAUTION

If a disc with a high recording level is used, the sound may distort even if the prevention of distortion function is set to "2" (ON). In this case, reduce the modulation level.

To cancel

Hold down the RDM button on the display unit for more than three seconds.

The LEVEL indicator will go off and the modulation level change will take effect.
The control mode is automatically canceled if you do nothing for 15 seconds.

MICROCOMPUTER'S TERMINAL DESCRIPTION

(RF MODULATOR UNIT) IC2: LC72329-8979

Terminal description

Pin	Port	Function	I/O	Operation	During HOLD
1	XIN	XIN	I	4.5 MHz X-tal	
2	TEST 2	——	I	(Connected to GND.)	
3	PG3	GND	I		—
4	PG2	GND	I		—
5	PG1	GAIN SEL	I	Fixed at Vss. (Modulation output stage switching selection terminal.)	—
6	PG0		I	Connected to GND.	—
7	PH3		O	Not use.	Open
8	PH2		O	Not use.	Open
9	PH1		O	Not use.	Open
10	PH0	MUTE1	O	Open. (Muting output terminal 1 for tuner frequency variation.)	L (in 15 sec.) H
11	PF3	MUTE2	O	Open. (Muting output terminal 2 for tuner frequency variation.)	L (in 15 sec.) H
12	PF2	$\overline{\text{REQC}}$	I	CD Changer REQC.	H
13	PF1	$\overline{\text{REQH}}$	O	CD Changer REQH.	H
14	PF0	CHCON	O	CD Changer ON.	L
15	PE3	DATA IN	I	CD Changer DATA in.	—
16	PE2	DATA OUT	O	CD Changer DATA out.	—
17	PE1	$\overline{\text{SCK}}$	I	CD Changer DATA SCK.	H
18	PE0		O	Not use.	L
19	PD3	LCD DATA OUT	O	LCD Driver DATA out.	L
20	PD2	LCD CLK	O	LCD Driver CLK out.	L
21	PD1	LCD RST	O	LCD Driver Reset out.	L
22	PD0	LCD CE	O	LCD Driver CE out.	L
23	PC3		O	Not use.	L
24	PC2		O	Not use.	L
25	PC1		O	Not use.	L
26	PC0	SEPA	O	Separation.	L
27	PB3		O	Not use.	L
28	PB2		O	Not use.	L
29	PB1	GAIN1	O	Modulation output switching.	L
30	PB0	GAIN2	O	Modulation output switching.	L
31	Vdd	Vdd	—	5 V.	
32	PA3	LCD DATA IN	I	LCD Driver DATA in.	—
33	PA2		I	Connected to GND.	—
34	PA1		I	Connected to GND.	—
35	PA0		I	Connected to GND.	—
36~58	S28~6		O	Not use.	L
59	S5	ALC LOW	O		L
60	S4	MUTE	O	Muting output terminal for tuner frequency variation.	L
61	S3	SEP ATT	O	Separation.	L
62	S2	RELAY	O	Antenna relay control output terminal.	L
63	S1	Pon	O	P-on.	L
64,65	COM2, 1	COM2, 1	O	Not use.	L
66	$\overline{\text{INT}}$	$\overline{\text{REMO INT}}$	I	Remote control signal input.	

KCA-R31FM/R41FM

MICROCOMPUTER'S TERMINAL DESCRIPTION

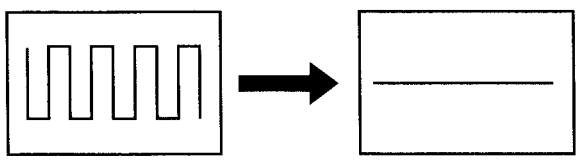
(RF MODULATOR UNIT) IC2: LC72329-8979

Pin	Port	Function	I/O	Operation	During HOLD
67	$\overline{\text{HOLD}}$	$\overline{\text{HOLD}}$	I	Acc detection. (Can also be made negative-going with the Reset SW.)	Released with ↑.
68	$\overline{\text{RES}}$	$\overline{\text{RESET}}$	I	Connected to Vdd.	
69	ADI		I	Connected to GND.	
70	HCTR		I	Connected to GND.	
71	LCTR		I	Connected to GND.	
72	$\overline{\text{SNS}}$		I	Connected to GND.	
73	Vdd	Vdd	—	5 V.	
74	FM IN	FM IN	I	VCO input.	
75	AM IN		I	Connected to GND.	
76	Vss	Vss	—	Connected to GND.	
77	EO1	EO1	O	Phase detector error output.	
78	EO2	EO2	O	Not use.	
79	TEST1		I	(Connected to GND.)	
80	XOUT	XOUT	O	4.5 MHz X-tal.	

ADJUSTMENT : RF MODULATOR

1. DC balance adjustment (VR301)

While observing the waveform with a oscilloscope at pin 13 of IC301, adjust VR301 to minimize the waveform level.



Make almost linear.

2. PLL control voltage adjustment (VC301)

First set the transmission frequency to 87.9 MHz with the commander, then adjust VC301 so that the DC voltage at the + pole of C317, measured using a multimeter or digital tester, is + 3 V (± 0.1 V).

3. Modulation level adjustment (VR303)

The method using a standard receiver or tuner.

Adjust VR303 so that the output level from the standard receiver or tuner is as specified. The positions of the VRs and switches should be set prior to this adjustment.

RF MODULATOR UNIT

DISPLAY UNIT (KCA-R31FM:T95-0223-08, KCA-R41F

to CHANGER CN102

CN101

CN103

CN102

CN106

CN104

CN105

CN1

IC1 : UPC7805AHF
IC2 : LC72329-B979
IC3,4 : NJM78L05UA
IC101 : NJM2060M
IC102,302 : NJM4565MD
IC301 : BA1405F

Q1 : DTC124EK
Q2 : 2SB1237(Q,R)
Q3 : DTC114EK
Q4,5,8,301,302,304,305, 308~311 : 2SC2712(GR)
Q6 : DTA124EK
Q9 : 2SC4640T/U
Q101,201 : DTC323TK
Q303 : 2SA1162(GR)
Q306 : 2SK508L
Q307 : 2SC2714(Y)

D1,5,9,14~16 : DSK10C
D6,8,12,13 : 1SS131
D301,302 : DA204K
VD301 : 1SV166
ZD1~7 : MTZ6.2J(B)

(DISPLAY UNIT)

MODEL NAME	IC2
KCA-R31FM	NO
KCA-R41FM	YES

(DISPLAY UNIT)
LCD1 : B38-0643-08
LED1~18 : B30-1459-08
D1~5 : DA204K
IC1 : LC75852W
IC2 : PNA4602M
Q1,4 : DTC144EK
Q2 : DTB123YK
Q3,5 : DTA144EK

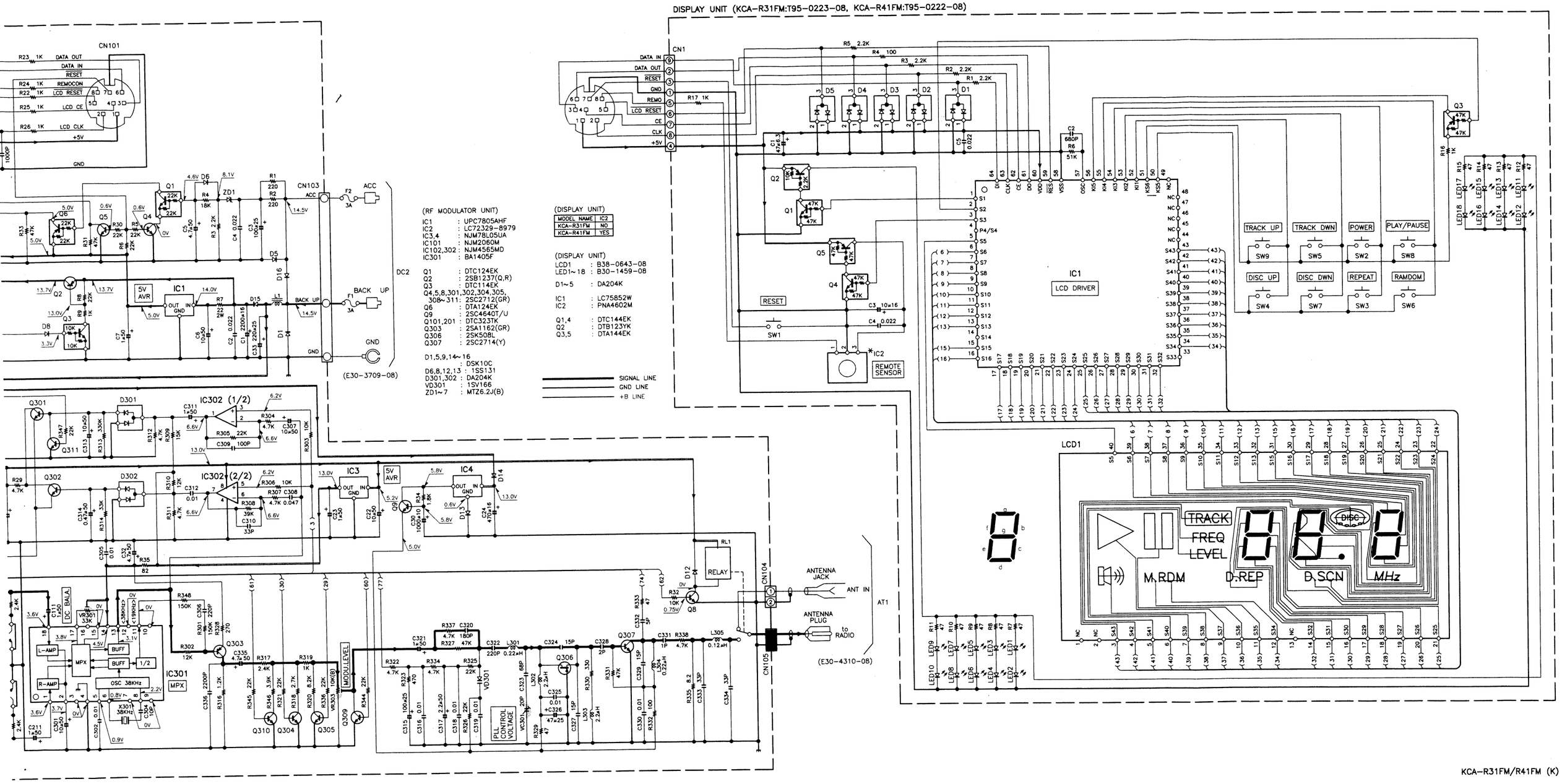
SIGNAL LINE
GND LINE
+B LINE

1 REQ H
2 GND(D)
3 BACK UP
4 CD POW
5 MUTE
6 S GND
7 RESET
8 R ch
9 REQ C
10 DATA IN
11 DATA OUT
12 L ch
13 SCK

1SV166

DA204K

DC voltages are
Values may vary
ments or/and uni



DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

CAUTION : For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ indicates safety critical components. For continued protection against risk of fire, replace only with same type and rating fuse(s). To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

Y23-4090-10

KCA-R31FM/R41FM (K)

KCA-R31FM/R41FM

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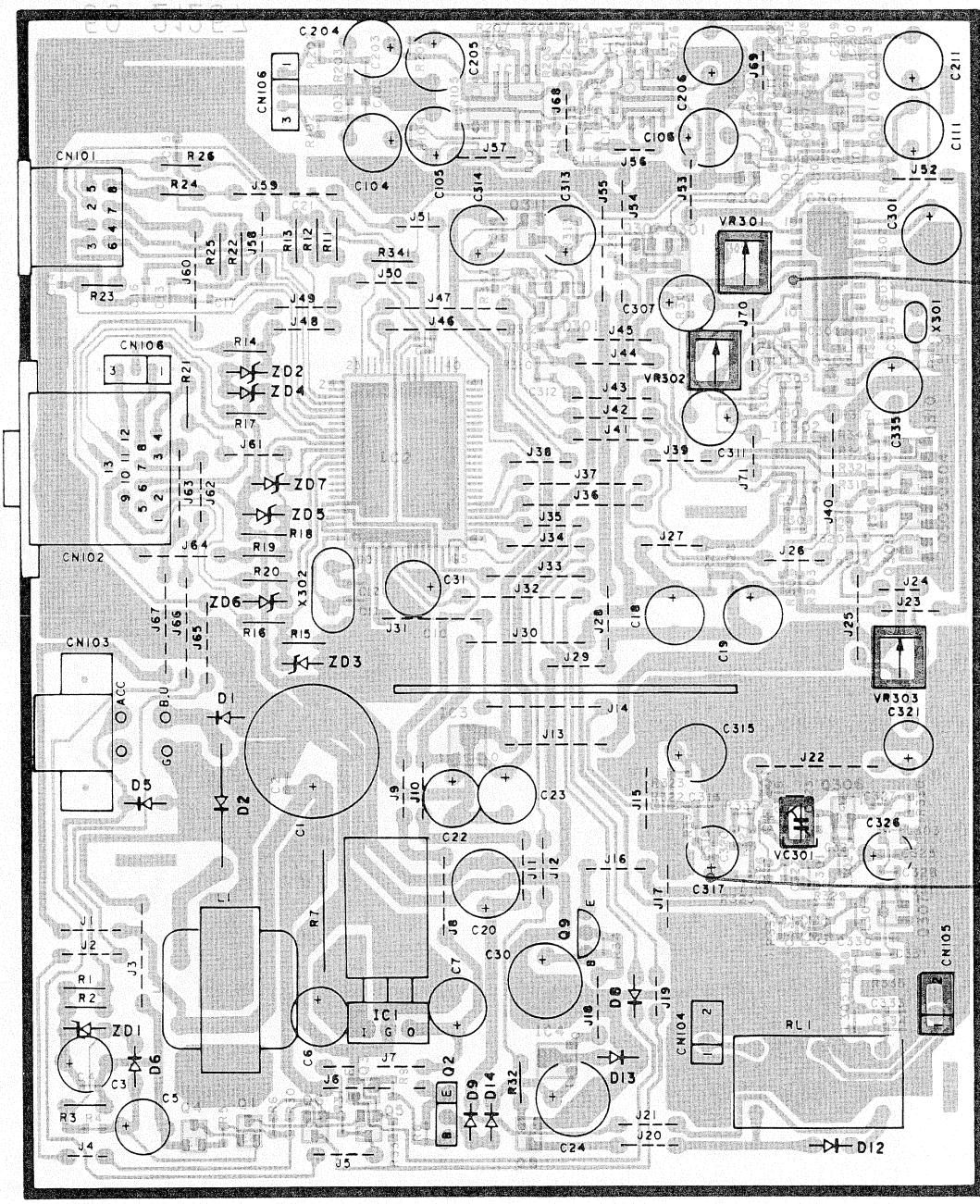
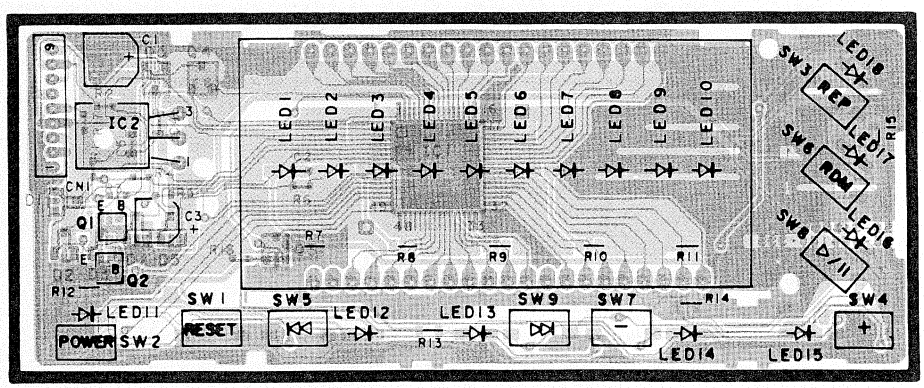
PC BOARD (Component side view)

RF MODULATOR UNIT

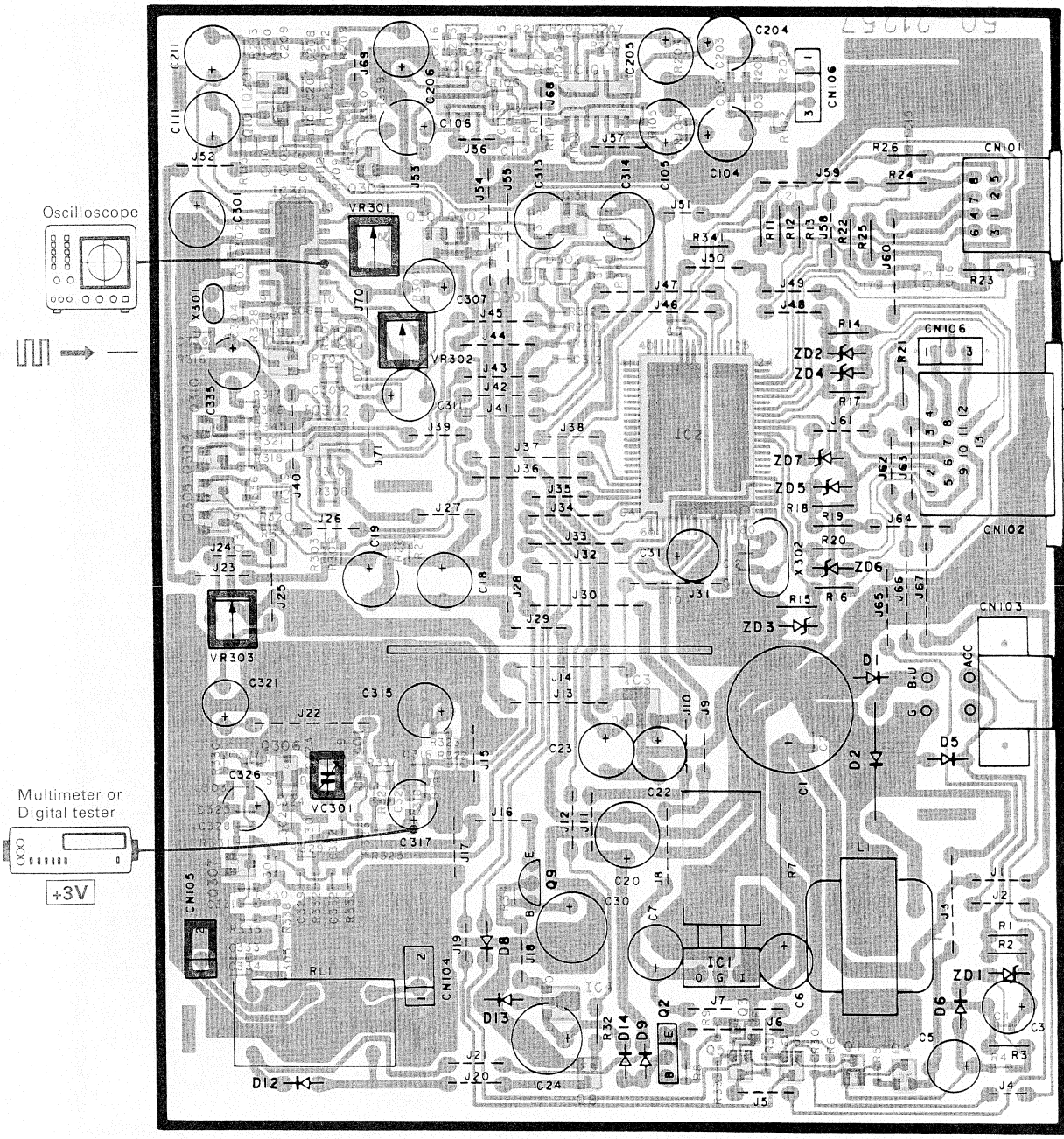


DISPLAY UNIT (T95-022X-08)

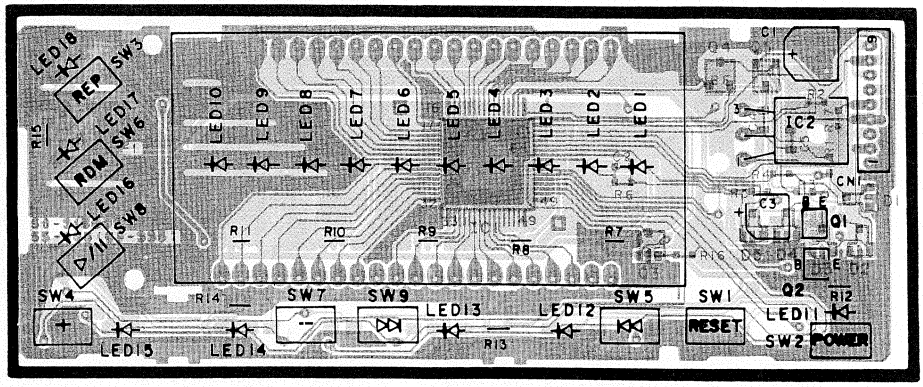


PC BOARD (Foil side view)

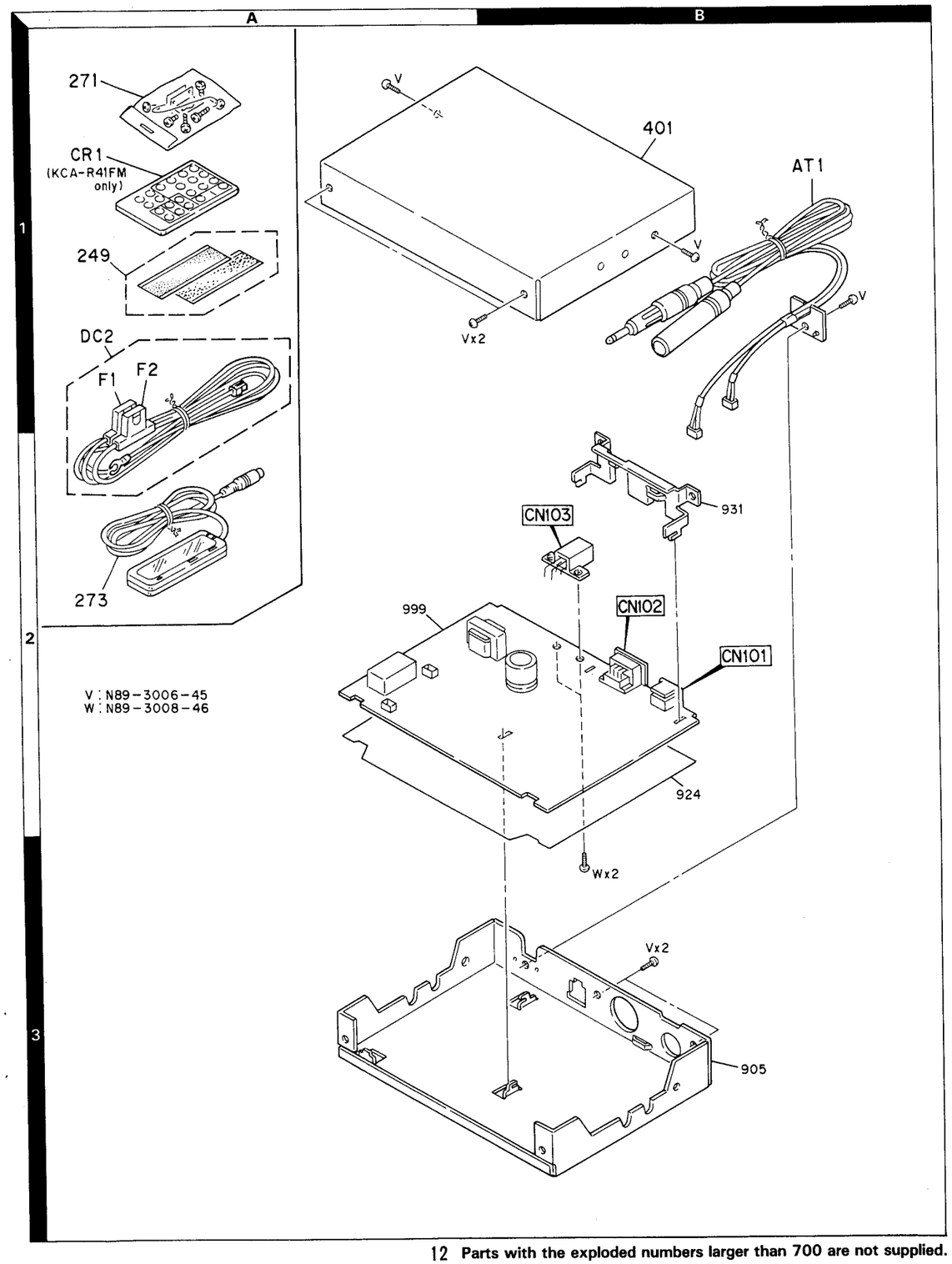
RF MODULATOR UNIT



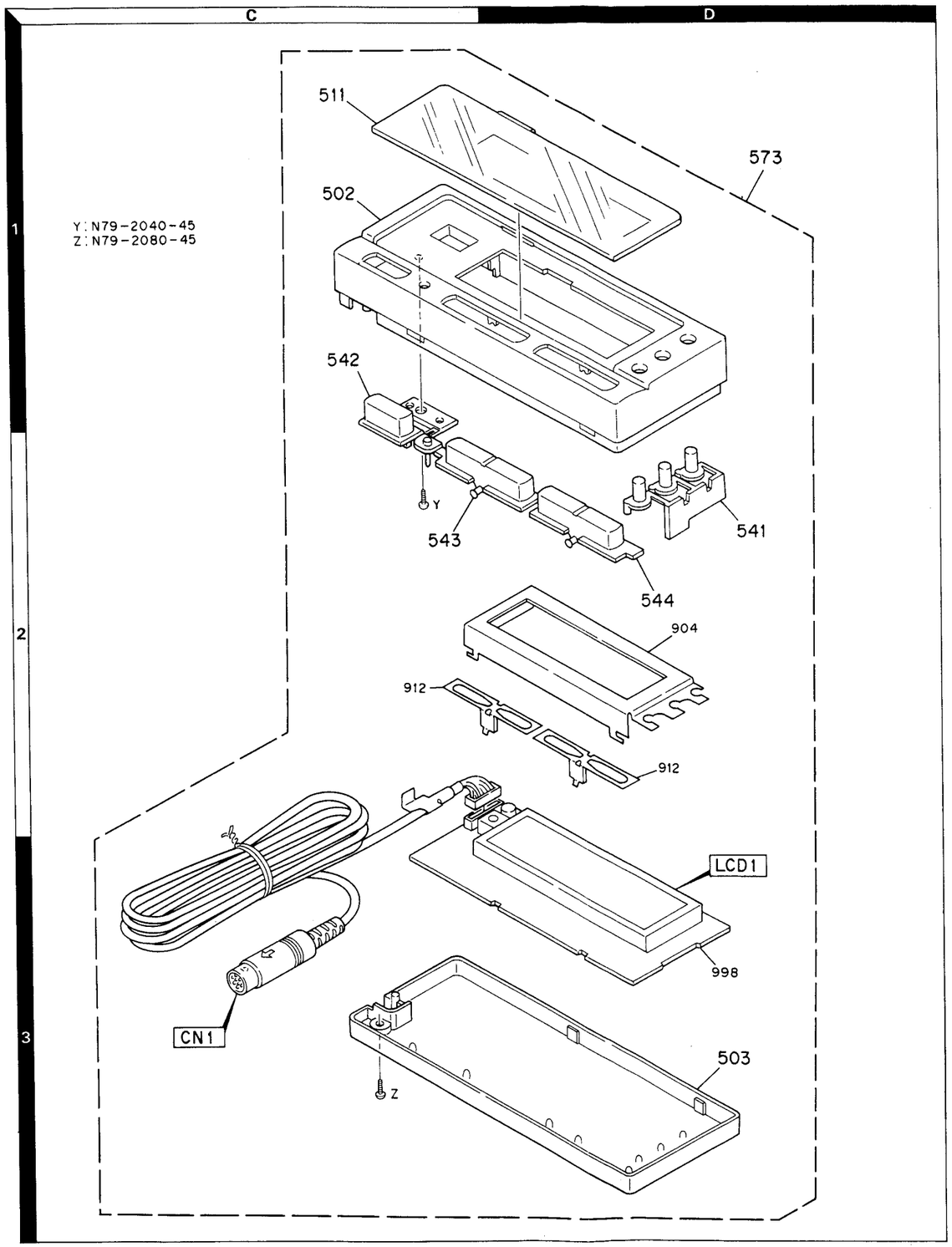
DISPLAY UNIT (T95-022X-08)



EXPLODED VIEW (RF MODULATOR UNIT)



EXPLODED VIEW (DISPLAY UNIT)



* New
Parts
Les ar
Teile d

Ref.
CR1
-
-
-
DC2
F1
249
-
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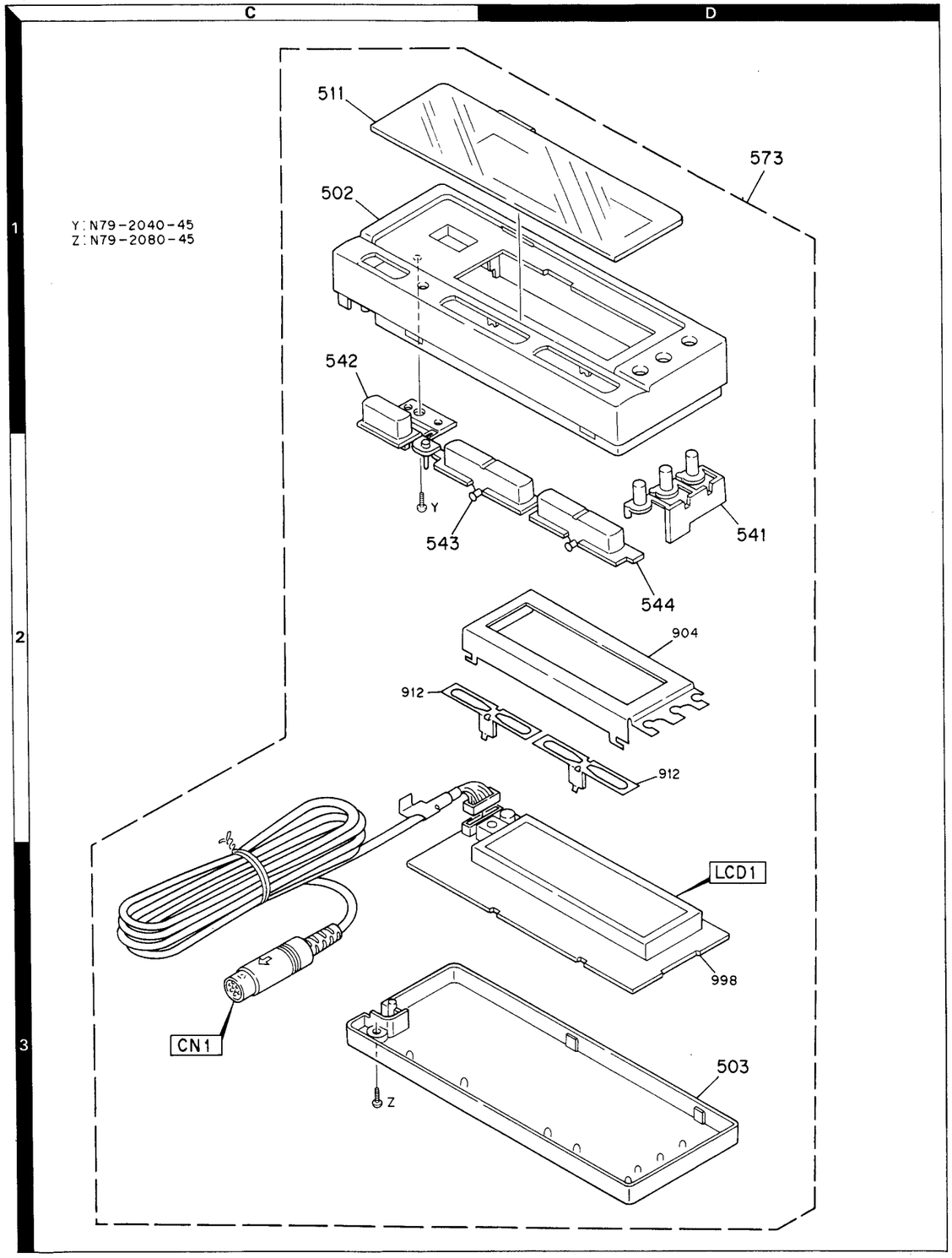
-
271
273
273
401
AT1
V
W
C1
C2
C3
C4
C5
C6
C7
C8
C9
C11
C13
C18
C19
C20
C22
C23
C24
C30
C31
C32
C33
C103
C104
C105
C106

EXPLODED VIEW (DISPLAY UNIT)



13 **Parts with the exploded numbers larger than 700 are not supplied.**

d.

PARTS LIST

* New Parts
Parts without Parts No. are not supplied.
Les articles non mentionnes dans le Parts No. ne sont pas fournis.
Teile ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名/規格	MODEL NAME KCA-
KCA-R31FM/R41FM					
CR1	1A	*	A70-0850-05	CARD REMOTE CONTROLER RC-100FM	R41FM
-			B46-0100-40	WARRANTY CARD	
-			B46-0172-13	QUESTIONNAIRE	
-		*	B64-0656-00	INST.MANUAL (ENGLISH, SPANISH)	
DC2	1A		E30-3709-08	DC CORD ASSY	
F1 ,2	1A		F06-3026-05	FUSE (3A) (a part of DC2)	
249	1A		H30-0501-08	MAGIC TAPE ASSY (20X60)	
-			H10-4504-08	POLYSTYRENE FOAMED FIXTURE	
-			H13-1639-08	PROTECTION BOARD	
-			H25-0226-04	PROTECTION BAG (forINST.MANUAL	
-		*	H25-0284-04	PROTECTION BAG (for RF MODUL.)	
-		*	H54-0441-08	ITEM CARTON CASE (KCA-R41FM)	R41FM
-		*	H54-0472-08	ITEM CARTON CASE (KCA-R31FM)	R31FM
-		*	H64-0481-08	OUTER CARTON CASE (KCA-R41FM)	R41FM
-		*	H64-0512-08	OUTER CARTON CASE (KCA-R31FM)	R31FM
271	1A		N99-1634-08	SCREW SET (+ L shape hardware)	
273	2A	*	T95-0222-08	DISPLAY UNIT ASSY (KCA-R41FM)	R41FM
273	2A	*	T95-0223-08	DISPLAY UNIT ASSY (KCA-R31FM)	R31FM
RF MODULATOR UNIT					
401	1B	*	A01-2603-08	CASE	
AT1	1B	*	E30-4310-08	ANTENNA CORD ASSY	
V	1A		N89-3006-45	SCREW (x7)	
W	3B		N89-3008-46	SCREW (for CN103 x2)	
C1			C90-1401-05	ELECTRO 2200UF 16WV	
C2			CK73FB1H223KTA	CHIP C 0.022UF K	
C3			CE04DW1E101M	ELECTRO 100UF 25WV	
C4			CK73FB1H223KTA	CHIP C 0.022UF K	
C5			CE04DW1H4R7M	ELECTRO 4.7UF 50WV	
C6			CE04DW1H100M	ELECTRO 10UF 50WV	
C7			CE04DW1H010M	ELECTRO 1.0UF 50WV	
C8			CK73FB1H102K	CHIP C 1000PF K	
C9 ,10			CK73FB1H103K	CHIP C 0.010UF K	
C11 ,12			CC73FCH1H220J	CHIP C 22PF J	
C13 -17			CK73FB1H102K	CHIP C 1000PF K	
C18			CE04DW1H100M	ELECTRO 10UF 50WV	
C19			CE04DW1E101M	ELECTRO 100UF 25WV	
C20			CE04DW1E221M	ELECTRO 220UF 25WV	
C22			CE04DW1H100M	ELECTRO 10UF 50WV	
C23			CE04DW1H010M	ELECTRO 1.0UF 50WV	
C24			CE04DW1C471M	ELECTRO 470UF 16WV	
C30			CE04DW1A102M	ELECTRO 1000UF 10WV	
C31			CE04DW1A221M	ELECTRO 220UF 10WV	
C32			CE04DW1H4R7M	ELECTRO 4.7UF 50WV	
C33			CE04DW1E221M	ELECTRO 220UF 25WV	
C103			CK73FB1H682K	CHIP C 6800PF K	
C104			CE04DW1H100M	ELECTRO 10UF 50WV	
C105			CE04DW1E470M	ELECTRO 47UF 25WV	
C106			CE04DW1H4R7M	ELECTRO 4.7UF 50WV	

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名/規格	MODEL NAME KCA-
C107			CC73FCH1H471J	CHIP C 470PF J	
C108			CK73FB1H102K	CHIP C 1000PF K	
C109,110			CK73FF1H104Z	CHIP C 0.10UF Z	
C111			CE04DW1H010M	ELECTRO 1.0UF 50WV	
C112			CK73FB1H332K	CHIP C 3300PF K	
C113			CC73FCH1H181J	CHIP C 180PF J	
C114			CK73FB1H153K	CHIP C 0.015UF K	
C203			CK73FB1H682K	CHIP C 6800PF K	
C204			CE04DW1H100M	ELECTRO 10UF 50WV	
C205			CE04DW1E470M	ELECTRO 47UF 25WV	
C206			CE04DW1H4R7M	ELECTRO 4.7UF 50WV	
C207			CC73FCH1H471J	CHIP C 470PF J	
C208			CK73FB1H102K	CHIP C 1000PF K	
C209,210			CK73FF1H104Z	CHIP C 0.10UF Z	
C211			CE04DW1H010M	ELECTRO 1.0UF 50WV	
C212			CK73FB1H332K	CHIP C 3300PF K	
C213			CC73FCH1H181J	CHIP C 180PF J	
C214			CK73FB1H153K	CHIP C 0.015UF K	
C301			CE04DW1H100M	ELECTRO 10UF 50WV	
C302			CK73FB1H103K	CHIP C 0.010UF K	
C304			CC73FCH1H100D	CHIP C 10PF D	
C305			CK73FB1H103K	CHIP C 0.010UF K	
C306			CC73FCH1H221J	CHIP C 220PF J	
C307			CE04DW1H100M	ELECTRO 10UF 50WV	
C308			CK73FB1H473K	CHIP C 0.047UF K	
C309			CC73FCH1H101J	CHIP C 100PF J	
C310			CC73FCH1H330J	CHIP C 33PF J	
C311			CE04DW1H010M	ELECTRO 1.0UF 50WV	
C312			CK73FB1H103K	CHIP C 0.010UF K	
C313			CE04DW1H100M	ELECTRO 10UF 50WV	
C314			CE04DW1HR47M	ELECTRO 0.47UF 50WV	
C315			CE04DW1E101M	ELECTRO 100UF 25WV	
C316			CK73FB1H103K	CHIP C 0.010UF K	
C317			CE04DW1H2R2M	ELECTRO 2.2UF 50WV	
C318,319			CK73FB1H103K	CHIP C 0.010UF K	
C320			CC73FCH1H181J	CHIP C 180PF J	
C321			CE04DW1H010M	ELECTRO 1.0UF 50WV	
C322			CC73FUJ1H221J	CHIP C 220PF J	
C323			CC73FUJ1H680J	CHIP C 68PF J	
C324			CC73FUJ1H150J	CHIP C 15PF J	
C325			CK73FB1H103K	CHIP C 0.010UF K	
C326			CE04DW1E470M	ELECTRO 47UF 25WV	
C327			CC73FUJ1H150J	CHIP C 15PF J	
C328			CC73FCH1H020C	CHIP C 2.0PF C	
C329			CC73FCH1H150J	CHIP C 15PF J	
C330			CK73FB1H103K	CHIP C 0.010UF K	
C331			CC73FCH1H010C	CHIP C 1.0PF C	
C332			CC73FCH1H050C	CHIP C 5.0PF C	
C333,334			CC73FCH1H330J	CHIP C 33PF J	
C335			CE04DW1H4R7M	ELECTRO 4.7UF 50WV	
C336			CK73FB1H222K	CHIP C 2200PF K	
VC301		*	C05-0513-08	TRIMMER 20P	
CN101	2B		E56-0811-05	CONNECTOR	
CN102	2B		E56-0805-15	CONNECTOR	

⚠ indicates safety critical components.

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PARTS LIST

(RF MODULATOR UNIT)

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名/規格	MODEL NAME KCA-
CN103	2B		E08-0413-05	CONNECTOR	
CN104,105			E40-3237-05	PIN ASSY	
CN106		*	E39-0122-08	CONNECTOR	
L1			L33-0934-08	CHOKING COIL	
L301		*	L33-1043-08	SMALL FIXED INDUCTOR (0.22uH)	
L302,303			L33-0976-08	SMALL FIXED INDUCTOR (2.2uH)	
L304		*	L33-1043-08	SMALL FIXED INDUCTOR (0.22uH)	
L305		*	L33-1042-08	SMALL FIXED INDUCTOR (0.12uH)	
X301			L77-2018-08	CRYSTAL RESONATOR (38KHz)	
X302			L77-1163-05	CRYSTAL RESONATOR (4.5MHz)	
R1 ,2			RD14BB2C221J	RD 220 J 1/6W	
R3			RD14BB2C222J	RD 2.2K J 1/6W	
R4			RK73FB2A183J	CHIP R 18K J 1/10W	
R5 ,6			RK73FB2A223J	CHIP R 22K J 1/10W	
R7		*	R92-2148-08	CHIP R 22 J 2W	
R8			RK73FB2A223J	CHIP R 22K J 1/10W	
R9			RK73FB2A102J	CHIP R 1.0K J 1/10W	
R11			RD14BB2C102J	RD 1.0K J 1/6W	
R12			RD14BB2C103J	RD 10K J 1/6W	
R13			RD14BB2C104J	RD 100K J 1/6W	
R14			RD14BB2C222J	RD 2.2K J 1/6W	
R15			RD14BB2C104J	RD 100K J 1/6W	
R16			RD14BB2C222J	RD 2.2K J 1/6W	
R17			RD14BB2C101J	RD 100 J 1/6W	
R18			RD14BB2C104J	RD 100K J 1/6W	
R19			RD14BB2C222J	RD 2.2K J 1/6W	
R20			RD14BB2C101J	RD 100 J 1/6W	
R21			RD14BB2C472J	RD 4.7K J 1/6W	
R22 ,23			RD14BB2C102J	RD 1.0K J 1/6W	
R24			RD14BB2C101J	RD 100 J 1/6W	
R25 ,26			RD14BB2C102J	RD 1.0K J 1/6W	
R27 ,28			RK73FB2A103J	CHIP R 10K J 1/10W	
R29			RK73FB2A472J	CHIP R 4.7K J 1/10W	
R30			RK73FB2A223J	CHIP R 22K J 1/10W	
R31			RK73FB2A473J	CHIP R 47K J 1/10W	
R32			RD14BB2C103J	RD 10K J 1/6W	
R33			RK73FB2A473J	CHIP R 47K J 1/10W	
R34			RK73FB2A182J	CHIP R 1.8K J 1/10W	
R35			RK73FB2A820J	CHIP R 82 J 1/10W	
R102			RK73FB2A562J	CHIP R 5.6K J 1/10W	
R103			RK73FB2A332J	CHIP R 3.3K J 1/10W	
R104			RK73FB2A103J	CHIP R 10K J 1/10W	
R105-108			R92-2034-05	CHIP R 10K D 1/10W	
R109			RK73FB2A102J	CHIP R 1.0K J 1/10W	
R110			RK73FB2A272J	CHIP R 2.7K J 1/10W	
R111			RK73FB2A182J	CHIP R 1.8K J 1/10W	
R112			RK73FB2A753J	CHIP R 75K J 1/10W	
R113			RK73FB2A242J	CHIP R 2.4K J 1/10W	
R114-116			RK73FB2A682J	CHIP R 6.8K J 1/10W	
R202			RK73FB2A562J	CHIP R 5.6K J 1/10W	
R203			RK73FB2A332J	CHIP R 3.3K J 1/10W	
R204			RK73FB2A103J	CHIP R 10K J 1/10W	
R205-208			R92-2034-05	CHIP R 10K D 1/10W	
R209			RK73FB2A102J	CHIP R 1.0K J 1/10W	
R210			RK73FB2A272J	CHIP R 2.7K J 1/10W	
R212			RK73FB2A753J	CHIP R 75K J 1/10W	
R213			RK73FB2A242J	CHIP R 2.4K J 1/10W	
R214-216			RK73FB2A682J	CHIP R 6.8K J 1/10W	
R301			RK73FB2A154J	CHIP R 150K J 1/10W	
R302			RK73FB2A123J	CHIP R 12K J 1/10W	
R303			RK73FB2A103J	CHIP R 10K J 1/10W	
R304			RK73FB2A472J	CHIP R 4.7K J 1/10W	
R305			RK73FB2A223J	CHIP R 22K J 1/10W	
R306			RK73FB2A103J	CHIP R 10K J 1/10W	
R307			RK73FB2A472J	CHIP R 4.7K J 1/10W	
R308			RK73FB2A393J	CHIP R 39K J 1/10W	
R309			RK73FB2A153J	CHIP R 15K J 1/10W	
R310			RK73FB2A123J	CHIP R 12K J 1/10W	
R311,312			RK73FB2A472J	CHIP R 4.7K J 1/10W	
R313			RK73FB2A334J	CHIP R 330K J 1/10W	
R314			RK73FB2A333J	CHIP R 33K J 1/10W	
R316			RK73FB2A122J	CHIP R 1.2K J 1/10W	
R317			RK73FB2A242J	CHIP R 2.4K J 1/10W	
R318			RK73FB2A272J	CHIP R 2.7K J 1/10W	
R319			RK73FB2A102J	CHIP R 1.0K J 1/10W	
R320			RK73FB2A822J	CHIP R 8.2K J 1/10W	
R321			RK73FB2A223J	CHIP R 22K J 1/10W	
R322			RK73FB2A472J	CHIP R 4.7K J 1/10W	
R323			RK73FB2A471J	CHIP R 470 J 1/10W	
R325,326			RK73FB2A223J	CHIP R 22K J 1/10W	
R327			RK73FB2A473J	CHIP R 47K J 1/10W	
R328			RK73FB2A271J	CHIP R 270 J 1/10W	
R329			RK73FB2A470J	CHIP R 47 J 1/10W	
R330			RK73FB2A331J	CHIP R 330 J 1/10W	
R331			RK73FB2A473J	CHIP R 47K J 1/10W	
R332			RK73FB2A101J	CHIP R 100 J 1/10W	
R333			RK73FB2A470J	CHIP R 47 J 1/10W	
R334			RK73FB2A472J	CHIP R 4.7K J 1/10W	
R335			RK73FB2A8R2J	CHIP R 8.2 J 1/10W	
R336			RK73FB2A223J	CHIP R 22K J 1/10W	
R337,338			RK73FB2A472J	CHIP R 4.7K J 1/10W	
R339,340			RK73FB2A681J	CHIP R 680 J 1/10W	
R341			RD14BB2C103J	RD 10K J 1/6W	
R343			RK73FB2A271J	CHIP R 270 J 1/10W	
R344,345			RK73FB2A223J	CHIP R 22K J 1/10W	
R346			RK73FB2A392J	CHIP R 3.9K J 1/10W	
R347			RK73FB2A223J	CHIP R 22K J 1/10W	
R348			RK73FB2A154J	CHIP R 150K J 1/10W	
VR301		*	R32-0208-08	TRIMING POT. 33K(B)	
VR303		*	R32-0207-08	TRIMING POT. 10K(B)	
RL1			S76-0802-08	MAGNET RELAY	
D1			DSK10C	DIODE	
D5			DSK10C	DIODE	
D6			1SS131	DIODE	
D8			1SS131	DIODE	
D9			DSK10C	DIODE	
D12 ,13			1SS131	DIODE	

⚠ indicates safety critical components.

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PARTS LIST

(RF MODULATOR UNIT)

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名/規格	MODEL NAME KCA-
D14 -16			DSK10C	DIODE	
D301,302			DA204K	DIODE	
VD301			1SV166	VARIABLE DIODE	
ZD1 -7			MTZ6.2J(B)	ZENER DIODE	
IC1			UPC7805AHF	IC(VOLTAGE REGULATOR/ +5V)	
IC2		*	LC72329-8979	IC (MICRO COMPUTER)	
IC3 ,4			NJM78L05UA	IC(VOLTAGE REGULATOR/ +5V)	
IC101			NJM2060M	IC(OP AMP X4)	
IC102			NJM4565MD	IC(OP AMP X2)	
IC301			BA1405F	IC (MPX)	
IC302			NJM4565MD	IC(OP AMP X2)	
Q1			DTC124EK	DIGITAL TRANSISTOR	
Q2			2SB1237(Q,R)	TRANSISTOR	
Q3			DTC114EK	DIGITAL TRANSISTOR	
Q4 ,5			2SC2712(GR)	TRANSISTOR	
Q6			DTA124EK	DIGITAL TRANSISTOR	
Q8			2SC2712(GR)	TRANSISTOR	
Q9			2SC4640T/U	TRANSISTOR	
Q101			DTC323TK	DIGITAL TRANSISTOR	
Q201			DTC323TK	DIGITAL TRANSISTOR	
Q301,302			2SC2712(GR)	TRANSISTOR	
Q303			2SA1162(GR)	TRANSISTOR	
Q304,305			2SC2712(GR)	TRANSISTOR	
Q306		*	2SK508L	FET	
Q307			2SC2714(Y)	TRANSISTOR	
Q308-311			2SC2712(GR)	TRANSISTOR	

DISPLAY UNIT (T95-022X-08)

502	1C	*	A02-1460-08	FRONT CASE	
503	3D		A02-1446-08	REAR CASE	
511	1C	*	B10-1659-08	FRONT GLASS ASSY (KCA-R41FM)	R41FM
511	1C	*	B10-1660-08	FRONT GLASS ASSY (KCA-R31FM)	R31FM
541	2D		K25-0713-08	KNOB (REP, RDM, PLAY/PAUSE)	
542	1C		K29-5576-08	KNOB ASSY (PWR, RESET)	
543	2C	*	K29-5585-08	KNOB (TRACK)	
544	2D	*	K29-5586-08	KNOB (DISC)	
Y	2C		N79-2040-45	SCREW (POWER-KEY x1)	
Z	3C		N79-2080-45	SCREW (REAR CASE x1)	
573	1D	*	T95-0222-08	DISPLAY UNIT ASSY (KCA-R41FM)	R41FM
573	1D	*	T95-0223-08	DISPLAY UNIT ASSY (KCA-R31FM)	R31FM
LCD1	3D	*	B38-0643-08	LCD	
LED1-18			B30-1459-08	LED	
C1			C92-0047-05	CHIP-ELE 47UF 6.3WV	
C2			CK73GB1H681K	CHIP C 680PF K	
C3			C92-0037-05	CHIP-ELE 10UF 16WV	
C4 ,5			CK73FB1H223KTA	CHIP C 0.022UF K	
CN1	3C	*	E30-4309-08	DIN CORD ASSY (8P)	
R1 -3			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R4			RK73GB1J101J	CHIP R 100 J 1/16W	
R5			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R6			RK73GB1J513J	CHIP R 51K J 1/16W	
R7 -15			RK73GB1J470J	CHIP R 47 J 1/16W	
R16 ,17			RK73GB1J102J	CHIP R 1.0K J 1/16W	
SW1 -9			S70-0828-08	TACT SWITCH	
D1 -5			DA204K	DIODE	
IC1		*	LC75852W	IC (LCD DRIVER)	
IC2			PNA4602M	IC (REMOTE) (for KCA-R41FM)	R41FM
Q1			DTC144EK	DIGITAL TRANSISTOR	
Q2			DTB123YK	DIGITAL TRANSISTOR	
Q3			DTA144EK	DIGITAL TRANSISTOR	
Q4			DTC144EK	DIGITAL TRANSISTOR	
Q5			DTA144EK	DIGITAL TRANSISTOR	

⚠ indicates safety critical components.

KCA-R31FM/R41FM

SPECIFICATIONS

Specifications subject to change without notice.

Modulating Frequency	87.7, 87.9, 88.1, 88.3, 88.5, 88.7, 88.9, 89.1, 89.3, 89.5, 89.7, 89.9 MHz

General

Operating Voltage	14.4 V (11 ~ 16 V)
Current consumption	0.25 A (When no disc changer is connected)
Operating Temperature	–10 ~ 50 °C
Size (W × H × D)	
(Controller) (KCA-R41FM only)	54 × 85 × 5 mm (2-1/8 × 3-3/8× 3/16 in.)
(Display unit)	105 × 40 × 18 mm (4-1/8 × 1-9/16 × 11/16 in.)
(RF modulator unit)	150 × 30 × 120 mm (5-7/8 × 1-3/16 × 4-3/4 in.)
Weight	
(Controller) (KCA-R41FM only)	0.028 kg (0.06 lbs)
(Display unit)	0.125 kg (0.28 lbs)
(RF modulator unit)	0.645 kg (1.42 lbs)

KENWOOD follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

KENWOOD poursuit une politique de progrès constants en ce qui concerne le développement. Pour cette raison, les spécifications sont sujettes à modifications sans préavis.

KENWOOD strebt ständige, Verbesserungen in der Entwicklung an. Daher bleiben Änderungen der technischen Daten jederzeit vorbehalten.

Note:
Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on the U.S.A. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

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